

Natural Gas Price Forecast

OVERVIEW

What is the Natural Gas Price Forecast?

BC Hydro has produced 20-year forecasts of market natural gas prices for each of the major trading hubs in the Western Interconnected system (WECC regional market), which include the Western U.S. states, B.C. and Alberta. Specifically, the gas prices are expected to be what a buyer would pay for gas at that specific time in the future. All forecast results are generated on a monthly resolution basis.

The gas prices are not produced as a single outlook. BC Hydro has adopted a forecast-based approach, and has produced 3 separate forecasts (High, Medium and Low) based on varying key assumptions that affect natural gas prices. These primary assumed price drivers are gas demand (general economic health) and gas production technologies. The forecasts are covered in detail in the accompanying presentation slide deck.

How is it Used in the Integrated Resource Plan (IRP)?

Natural gas prices are a key input into BC Hydro's electricity price forecasts. The WECC's electricity and natural gas markets have become closely inter-related since natural gas has become the predominant fuel for new electricity generation. The inter-related nature of the electricity and natural gas markets means that market prices for electricity are closely tied to the market prices for natural gas. This is due to natural gas-fired generation's operational flexibility and relatively high variable operating costs, which typically places it last in the order of generation resources to be dispatched. As such, natural gas-fired generation is the marginal market resource and gas prices are likely to drive electricity market prices in the foreseeable future.

Another use of the gas price forecasts is in the Resource Options Report (ROR), which summarizes the generation resource potential in the region. Natural gas prices are the key driver of the overall cost of gas-fired generation.

The three separate natural gas price forecasts (High, Medium, and Low) are inputs into the five spot market electricity price forecasts, which are chosen in a way so that the underlying assumptions driving these prices are consistent with the assumptions made for throughout the rest of the forecasts in the development of market scenarios. For more information, refer to the *Market Scenarios for the IRP Risk Framework* summary brief.

How is it Developed?

In the 2008 Long-Term Acquisition Plan, BC Hydro used gas price forecasts from the California Energy Commission (CEC). For the 2010 IRP, BC Hydro has updated the CEC work to include the production and price impacts of shale gas. The price forecasts were updated using third-party advice, specifically by the consultants Black & Veatch.

PURPOSE

This brief provides background information on the Long-Term Natural Gas Price Forecasts used in the 2011 Integrated Resource Plan (IRP).

Inputs and Assumptions

As with other commodities, gas prices are subject to the pressures of supply and demand. The current supply 'softness' has driven prices to historically low levels even with high oil prices. The discovery of shale gas and the continuing development of LNG imports have added a new low cost continental gas supply. If shale gas hadn't materialized, the North American gas market would have become increasingly influenced by global price drivers (similar to High gas forecast). Uncertainty about the timing and availability of new gas supply additions and environmental issues of shale gas justifies a large forecast price range.

The three selected gas price forecasts and key associated assumptions are:

Gas Price Forecast	Sources/ Vintage	Key Assumptions
High	Same as 2008 LTAP High Price Forecast	<ul style="list-style-type: none"> • Same assumptions as 2008 High Forecast with no additional shale gas due to potential environmental issues
Mid	Ventyx's Fall 2010 Reference Forecast. Ventyx is a consulting firm that provides some of BC Hydro's key electricity price modelling parameters	<ul style="list-style-type: none"> • Most current view of the world with shale gas
Low	Updated from 2008 LTAP Low Forecast by Black & Veatch	<ul style="list-style-type: none"> • Low gas demand due to high energy conservation • Low gas demand due to high renewable electricity generation build • Low world oil prices • Includes shale gas